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252. Proposed by FREDERICK R. HONEY, Ph. B., Trinity College, Hartford, Conn.

Two plane mirrors form an angle which is less than 45° . Any two points are assumed within this angle in a plane perpendicular to the intersection of the mirrors. A ray of light passes through one point, and after being reflected twice at each mirror, it passes through the second point. Find the path of the ray.

253. Proposed by SAM I. JONES, Gunter Bible College, Gunter, Texas.

The number of cubic inches contained by two equal opposite spherical segments, together with the number of cubic inches contained by the cylinder included between these segments, is 600; if this be $\frac{2}{3}$ of the number of cubic inches contained by the whole sphere, find the height of the cylinder.

CALCULUS.

191. Proposed by J. E. SANDERS, Hackney, Ohio.

A fly goes along a radius of a moving carriage wheel from center to circumference while the wheel makes n revolutions. If each move uniformly, what is the equation to the curve described by the fly in space, and what is its length when the wheel has made $1/m$ of a revolution?

192. Proposed by G. B. M. ZERR, A. M., Ph. D., Parsons, W. Va.

Show that the volume V of the hyper-ellipsoid with semi-axes a_1, a_2, a_3, a_4 , etc., in space of $2n$ and $2n+1$ dimensions is

$$V_{2n} = \frac{a_1 \cdot a_2 \cdot a_3 \cdots a_{2n} \cdot \pi^n}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdots n}; \quad V_{2n+1} = \frac{2^{n+1} \cdot a_1 \cdot a_2 \cdot a_3 \cdots a_{2n+1} \cdot \pi^n}{1 \cdot 3 \cdot 5 \cdot 7 \cdot 9 \cdots (2n+1)}.$$

193. Proposed by F. P. MATZ, Sc. D., Ph. D., Reading, Pa.

Find the eccentricity of the maximum semi-ellipse inscribed in a given isosceles triangle.

MECHANICS.

173. Proposed by J. F. LAWRENCE, A. B., Professor of Mathematics, Oklahoma Agricultural College, Stillwater, Oklahoma.

A squirrel is in a cylindrical cage and oscillating with it about its axis which is horizontal. At the instant when he is at the highest point of the oscillation, he leaps to the opposite extremity of the diameter and arrives there at the same instant as the point at which he left. Determine his leap completely.

174. Proposed by F. P. MATZ, Sc. D., Ph. D., Reading, Pa.

By what per cent. is the striking force of a hailstone increased in falling 1000 feet through a stratum of atmosphere moving uniformly eastward at the rate of 60 miles an hour?